

Application  
Number: 10/798,004 Inventor: Robert A. Gonsalves Filed: March 12, 2004  
Title: Video camera utilizing sequential diversity imaging for image clarification  
Art Unit: 2622 Examiner: Luong T. Nguyen

## Reply to the Office Action of October 26, 2009

### Amendment to Claims

#### CLAIMS

What is claimed is:

1. (Currently amended) A video camera with an imaging system and a sequential diversity processor for enhanced image clarification comprising:  
  
an imaging system with an adaptive optic device arranged for canceling aberrations introduced by an optical medium to produce solely adapted in-focus digital images of an object; and  
  
a sequential diversity processor using said solely adapted in-focus digital images as diverse images and using changes in said adaptive optic device as diversities to calculate control signals for said adaptive optic device;  
  
wherein said sequential diversity processor utilizes diversity D(k-1), the diversity at time k-1, along with current and previous digital images, I(k) and I(k-1), as the diverse images to produce Q(k-1), an estimate of the residual aberrations in a solely adapted in-focus digital image of said object at time k-1; wherein said sequential diversity processor sets diversity D(k) to the negative of the estimate of the residual aberration, that is, D(k) = -Q(k-1); and wherein T(k-1), the signal produced by the sequential diversity processor to control the adaptive optic device at time k-1, is added to D(k), to produce a control signal at time k, that is, T(k) = T(k-1) + D(k), which also implies that D(k) = T(k) - T(k-1) .

an imaging system for producing a sequence of digital images of an object, said object being continuously distorted by a changing optical medium; an adaptive optic device located within said imaging system, controlled by said sequential diversity processor and arranged for canceling aberrations introduced by said medium, aberrations such as those caused by a turbulent atmosphere or unwanted changes in said imaging system, to thereby provide solely adapted in focus images of said object; ;

a detector array within said imaging system arranged for receiving said solely adapted in focus images and producing digital image representations thereof; and

a sequential diversity processor connecting with said detector array and said adaptive optic device, said sequential diversity processor receiving said digital image representations from said detector array and providing sequential control signals to said adaptive optic device to enable said adaptive optic device to cancel said aberrations.

2 - 9 (Cancelled)

## Signature

I certify this submission of the Amendment to Claims to the above-named Application.

/Robert A. Gonsalves/

November 25, 2009

Robert A. Gonsalves

Date

12 Lexington St.  
Woburn, MA 01801

Applicant/Inventor

Customer Number: 76312